

CLAIMS

What is claimed is:

1. An air interface apparatus that operates as a signal
5 transmission carrier between an object under test and a probe
device when testing the object under test by using the probe
device, which comprises:

inner conductive means which has a long hollow
cylindrical shape and whose both ends are open;

10 outer conductive means whose both ends are open and which
surrounds the inner conductive means with a constant gap and
has a long cylindrical shape;

a first signal pin being contacted to the object under
test and inserted into and projected from one end of the inner
15 conductive means;

a second signal pin being contacted to the probe device
and inserted into and projected from the other end of the
inner conductive means;

elastic means for supporting the first and the second
20 signal pins within the inner conductive means to make the
first and the second signal pins move in and out from both
ends of the inner conductive means, respectively, by the
elastic force of the elastic means in response to external
pressure; and

25 insulating means for insulating the inner conductive
means from the outer conductive means, locating between the
inner conductive means and the outer conductive means at both

ends of the outer conductive means to thereby make the inner and the outer conductive means support each other.

2. The air interface apparatus recited in claim 1, wherein
5 air fills an empty space between the inner conductive means and the outer conductive means.

3. The air interface apparatus recited in claim 1, wherein,
when testing the object under test by using the probe device,
10 the first signal pin is contacted to the object under test and the second signal pin is contacted to the probe device, thereby acting as carriers for transmitting signals between the object under test and the probe device.

4. The air interface apparatus recited in claim 1, wherein
15 each of the first and the second signal pins includes a probing tip formed at its projected end.

5. The air interface apparatus recited in claim 1, wherein
20 the elastic means is formed with conductive material to make current flow from the probe device to the object under test; wherein the elastic means has an outside diameter smaller than an inside diameter of the inner conductive means, thereby being inserted into the inner conductive means; and wherein
25 the elastic means has an inner diameter equal to or smaller than diameters of the first and the second signal pins to support the first and the second signal pins.

6. The air interface apparatus recited in claim 1, wherein, while the first and the second signal pins are inserted into the inside of the inner conductive means and are not easily
5 releasable therefrom, the first and the second signal pins are easily released of the inner conductive means when there is an external pulling pressure, the first and the second signal pins being replaceable when the first and the second signal pins are damaged.

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7. The air interface apparatus recited in claim 4, wherein, while the first and the second signal pins are inserted into the inside of the inner conductive means and are not easily
15 releasable therefrom, the first and the second signal pins are easily released of the inner conductive means when there is an external pulling pressure, the first and the second signal pins being replaceable when the first and the second signal pins are damaged.

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8. The air interface apparatus recited in claim 1, wherein the inner conductive means implements the impedance matching in cooperation with the outer conductive means and functions as a socket that can be releasably mated with the first and the second signal pins.

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9. The air interface apparatus recited in claim 4, wherein the inner conductive means implements the impedance matching

in cooperation with the outer conductive means and functions as a socket that can be releasably mated with the first and the second signal pins.

- 5 10. The air interface apparatus recited in claim 1, wherein the inner and the outer conductive means define a characteristic impedance that is controlled by adjustment of an outside diameter of the inner conductive means and of an inside diameter of the outer conductive means.